



AlphaNet™ Series

External DOCSIS® Transponder



Technical Manual

Model XP-EDH-A2

Effective: October 2009

Power Alpha Technologies



AlphaNet™ Series External DOCSIS Transponder Model XP-EDH-A2 Technical Manual

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 **NOTE:**

Photographs and drawings contained in this manual are only for illustrative purposes. These photographs and drawings may not exactly match your installation.

 **NOTE:**

Review the written and illustrative information contained in this manual before proceeding. If there are questions regarding the safe installation or operation of this powering system or enclosure, please contact Alpha Technologies or your nearest Alpha representative.

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Table of Contents

Safety Notes.....	6
1.0 Introduction.....	7
1.1 System Overview.....	8
1.2 LED Indicators.....	9
1.3 MAC Address.....	9
2.0 Installation.....	10
2.1 General Installation Information for Supported Power Supplies.....	10
2.1.1 Mounting the Transponder.....	11
2.1.2 Disconnecting DC Power.....	11
2.1.3 Configuring the Interface Card.....	11
2.1.4 Wiring the Battery Harness.....	11
2.1.5 Connecting the Power Supply Interface and Measurement Cables ...	12
2.1.6 Confirming the RF Drop.....	12
2.1.7 Provisioning Network Connectivity.....	12
2.1.8 Configuring AM MIBS.....	12
2.1.9 Setting the DOCSIS Configuration File Options.....	13
2.1.10 Verifying Operation.....	13
3.0 Installation Instructions for Specific Power Supplies.....	14
3.1 Alpha XM2 Series.....	14
3.1.1 USM2.5 Jumper Settings.....	15
3.1.2 Output Voltage Calibration.....	15
3.1.3 USM2 Jumper Settings.....	16
3.1.4 Output Voltage Calibration.....	17
3.1.5 Connecting the XP-EDH-A2 to an XM2 Series Power Supply.....	18
3.1.6 Provisioning the Network for the XM2 Series.....	19
3.2 Alpha XM Series Power Supply.....	20
3.2.1 XM Series Jumper Settings.....	21
3.2.2 Output Voltage Calibration.....	21
3.2.3 Connecting the XP-EDH-A2 to a XM Series Power Supply.....	22
3.2.4 Provisioning the Network for the XM Series.....	23
3.3 Alpha AM/AP Series Power Supply.....	24
3.3.1 Connecting the XP-EDH-A2 to an AM/AP Series Power Supply.....	24
3.3.2 Output Voltage Calibration.....	26
3.3.3 Provisioning the Network for the AM/AP Series.....	26

3.4	Alpha/Lectro ZTT+ Series Power Supply.....	27
3.4.1	Alpha/Lectro ZTT+ Installation (Silver and Black).....	27
3.4.2	Connecting the Alpha/Lectro ZTT+ (Silver and Black).....	28
3.4.3	Connecting the Lectro ZTT.....	29
3.4.4	Alpha/Lectro ZTT+ Series Output Voltage Calibration.....	30
3.4.5	Provisioning the Network for the Alpha/Lectro ZTT+ Series.....	30
4.0	Proprietary Management Information Bases (MIBs).....	31
5.0	Transponder Connector Pinouts.....	32
6.0	Cable Selection Guide.....	33
7.0	Dimensions.....	36
7.1	Dimensions of XP-EDH-A2.....	36
7.2	Battery Cable Wiring Diagram.....	37
8.0	Specifications.....	38

List of Figures and Tables

Fig. 1-1,	AlphaNet Series Model XP-EDH-A2 External DOCSIS Status Monitor Front Panel.....	7
Fig. 1-2,	XP-EDH-A2 Front Panel.....	8
Fig. 1-3,	XP-EDH-A2 Rear Panel.....	8
Fig. 1-4,	LED Status.....	9
Fig. 1-5,	MAC Address Label.....	9
Fig. 3-1,	USM2.5 Switch/Jumper Settings.....	15
Fig. 3-2,	USM2 Settings for <48V and <20A.....	16
Fig. 3-3,	USM2 Settings for <48V and ≥20A.....	16
Fig. 3-4,	USM2 Settings for 48V and <20A.....	17
Fig. 3-5,	USM2 Settings for 48V and ≥20A.....	17
Fig. 3-6,	XM2 Series Installation with Four Batteries.....	18
Fig. 3-7,	XM/XP Power Supply Universal Status Monitor.....	21
Fig. 3-8,	XM Series Installation with Three Batteries.....	22
Fig. 3-9,	AM/AP Series Installation with Three Batteries.....	25
Fig. 3-10,	Lectro ZTT+ Series Power Supplies.....	27
Fig. 3-11,	Alpha/Lectro ZTT+ Series Silver and Black Installation.....	28
Fig. 3-12,	Lectro ZTT Series Installation.....	29
Fig. 7-1,	Outline Dimensions, XP-EDH-A2.....	36
Fig. 7-2,	Battery Cable Wiring Diagram.....	37
Table 1-1,	Number of Batteries and Strings.....	8
Table 4-1,	Proprietary MIBs.....	31
Table 5-1,	Transponder Connector Pinouts.....	32

Safety Notes

Review the drawings and illustrations contained in this manual before proceeding. If there are any questions regarding the safe installation or operation of the system, contact Alpha Technologies or the nearest Alpha representative. Save this document for future reference.

To reduce the risk of injury or death and to ensure the continued safe operation of this product, the following symbols have been placed throughout this manual. Where these symbols appear, use extra care and attention.

ATTENTION:

The use of ATTENTION indicates specific regulatory/code requirements that may affect the placement of equipment and /or installation procedures.



NOTE:

A NOTE provides additional information to help complete a specific task or procedure.



CAUTION!

The use of CAUTION indicates safety information intended to PREVENT DAMAGE to material or equipment.



WARNING!

WARNING presents safety information to PREVENT INJURY OR DEATH to the technician or user.

1.0 Introduction

The AlphaNet™ Series Model XP-EDH-A2 External DOCSIS Transponder manages network powering through the existing cable modem infrastructure.

A single transponder can monitor and manage one power supply and batteries. The transponder transmits data to a management system over the network's existing infrastructure. Standard SNMP (Simple Network Management Protocol) provides access by any SNMP manager. Status Monitoring information is compatible with ANSI/SCTE HMS standards.

The AlphaNet Series transponder provides the tools needed to manage today's network power requirements, and the ability to upgrade for tomorrow's needs.

Features:

- DOCSIS 2.0 certified
- Compatible with ANSI/SCTE HMS standards
- Single transponder supports a variety of power supply models: XM2, XM, AM, ZTT series
- Embedded Web server for remote diagnostics
- USB Port enables on-site technician access

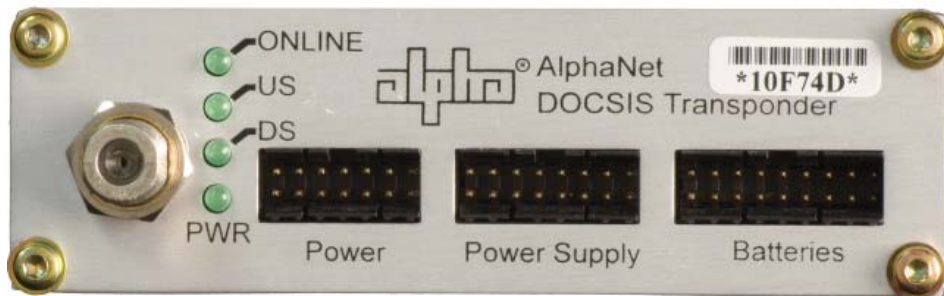


Fig. 1-1, Front panel, AlphaNet Series Model XP-EDH-A2, External DOCSIS Transponder

1.0 Introduction, continued

1.1 System Overview

The XP-EDH-A2 is designed for use with the following standby power supplies:

- XM2
- AM/AP
- XM
- ZTT, ZTT+

The transponder hardware is the same for all applications and harness kits are available for specific configurations.

The XP-EDH-A2 receives data from a Universal Status Monitoring Card on XM/XM2 series power supplies, from the status monitor connector on Lectro ZTT power supplies, or from the RPM card on AM power supplies. The transponder and power supply can be network managed through your existing CMTS.

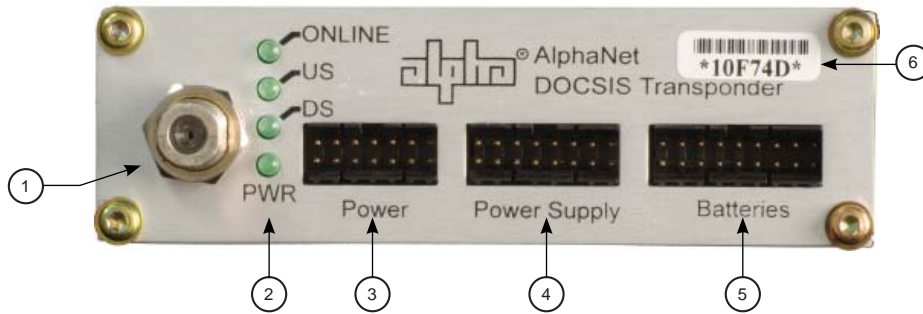


Fig. 1-2, XP-EDH-A2 Front Panel



Fig. 1-3, XP-EDH-A2 Rear Panel

- ① To CMTS
- ② Status LEDs
- ③ (Optional) Voltage In, Voltage Out, Current Out Sense Kits
- ④ Power Supply Connection
- ⑤ Battery String Connection
- ⑥ The complete MAC address will have an Organizational Unique Identifier – OUI (e.g., 00-03-08) in front of the MAC Address shown on this label.
- ⑦ USB Port for local diagnostics

Number of Batteries (Voltage)	Number of Strings
2 (24Vdc)	1
3 (36Vdc)	1
6 (36Vdc)	2
9 (36Vdc)	3
4 (48Vdc)	1
8 (48Vdc)	2
12 (48Vdc)	3

Table 1-1, Number of Batteries and Strings

1.0 Introduction, continued

1.2 LED Indicators

The front panel has four LEDs which indicate the following:

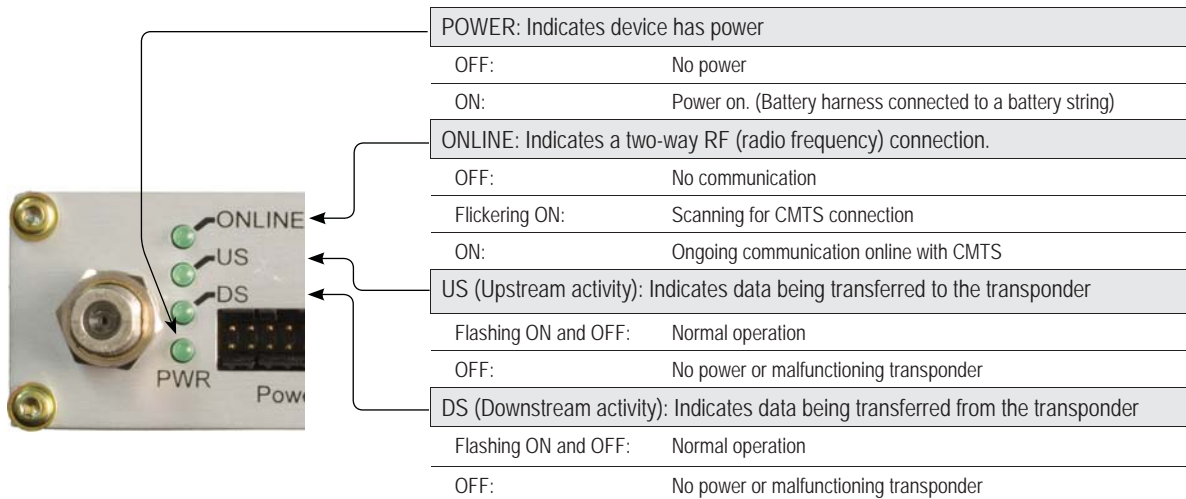


Fig. 1-4, LED Status

1.3 MAC Address

Each transponder is assigned a unique Media Access Control (MAC) address, which is used to communicate with the network. The first 6 digits of the MAC address (the Organizational Unique Identifier (OUI)) for the transponder is 00-03-08. The complete address is located on the label on the top of the device and in this example is 00 03 08 0B 10 F7 27.

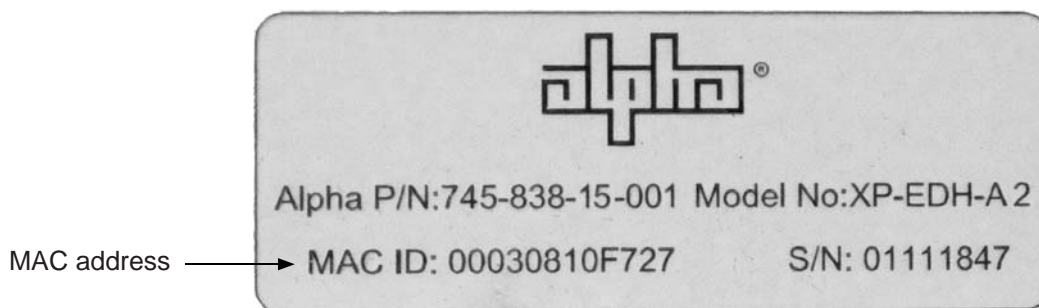


Fig. 1-5, MAC Address Label

2.0 Installation

Before installing the XP-EDH-A2 into a power supply, review your system requirements and determine the number of cable assemblies you need to monitor your HFC standby power supplies.

Note the following:

- The types and quantities of each power supply type
- Number of individual batteries per site (if you plan to increase the number of batteries in the future, consider ordering additional battery harnesses)
- Length of required battery harness (The standard 4 ft length battery harness is used in the typical power supply cabinet where one to three battery strings are mounted in the trays underneath the power supply shelf. If necessary, a 20 ft battery harness is available)
- The required type of interface cards (RPM, USM, USM2.5, etc.)
- Utility power available at the site, 110V or 220V.



NOTE:

The procedure for installing the XP-EDH-A2 into any supported power supply involves general information, (information that is common to all the power supplies), and information specific to an individual type of power supply. These installation instructions are divided into two sections to reflect this. It is recommended that you read through the general instructions and then take note of any information specific to your power supply.

Also, installation of this product involves both field installation and the configuration of the system, including network security, SNMP set-up, and other system provisioning. While those two procedures are handled independently, they are presented together in the section specific to your power supply.

2.1 General Installation Information for Supported Power Supplies

There are a few basic steps to follow to install the XP-EDH-A2 into supported power supply sites. The steps are either field steps or system configuration steps, and can be performed independently.

Field installation steps are:

1. Transponder Placement
2. Disconnecting the DC power
3. Configuring the Interface Card
4. Wiring the battery harness
5. Connecting the power supply interface and measurement cables
6. Confirming the RF drop

System configuration steps are:

7. Provisioning Network Connectivity
8. Configuring the MIBS
9. Setting the DOCSIS configuration file options

Completing and Testing the installation:

10. Verifying the operation

Detailed information on each of these steps follows.

2.0 Installation, continued

2.1 General Installation Information for Supported Power Supplies, continued

2.1.1 Transponder Placement

- Place the transponder on the shelf inside the cabinet next to the power supply. Do not place the transponder on top of the power supply.
- Maintain access to the front of the transponder to ease the connection of the cables.
- Ensure the cabinet door can close without damaging the cables.
- Route and tie-wrap the cables in an orderly manner.



NOTE:

Depending on the type of enclosure and the power supply you are using, it may be necessary to orient the Service Power Inserter (SPI) vertically to provide space for the transponder. Re-torque the SPI to spec (130 in/lbs) if repositioning becomes necessary. This is important, as the output neutral is not tied to ground until connected to the SPI /enclosure.



CAUTION!

Backup capability is suspended with the DC breaker in the OFF position.

2.1.2 Disconnecting the DC Power

Place the DC breaker in the OFF position.

2.1.3 Configuring the Interface Card

Each power supply contains an interface card which provides the common communication layer between the power supply and the transponder. The settings needed for your power supply are located in Section 3.0, "***Installation Instructions for Specific Power Supplies***".



CAUTION!

2.1.4 Wiring the Battery Harness

Incorrect connections may damage the equipment and invalidate the warranty. Double-check all connections.

- Prior to connecting the cables to the transponder, make all harness connections to the batteries and interface connectors on the power supply. See the battery diagrams for your specific power supply.
- Double-check all connections. Incorrect connections may damage the transponder or the power supply. Correct connections at the batteries are extremely important to the proper operation of the power supply.
- Ensure that the high current carrying cables and jumpers (heavy gauge black and red cables) remain in direct contact to the battery terminals.
- Never place the transponder battery harness lugs between the current carrying jumper/cable lugs and the battery terminals. See the power supply installation manual for more information.
- In some cases there are more battery harness leads than there are batteries. Connect all unused lugs to the same terminal as the V(-) lead, the same terminal where the heavy gauge black cable from the inverter is connected. This prevents stray voltages from being detected by the transponder.

2.0 Installation, continued

2.1 General Installation Information for Supported Power Supplies, continued

2.1.5 Connecting the Power Supply Interface and Measurement Cables

- Connect the power supply interface and measurement cables to the power supply. Connections are dependent on the type of power supply configuration you are using. See the section specific to your configuration.
- It is important to be able to measure the site input line voltage. If you are not using a USM2.5/XM2 power supply, then it is recommended you use a transformer (110V and 220V available*) to sample the commercial power at the site. While it does not power the transponder, it makes it possible for the transponder to report the actual line voltage. An additional transformer is not necessary when using a USM2.5/XM2 power supply.
- Use a surge protector within the cabinet when you are using a transformer to measure line voltage. Most cabinets come equipped with a duplex outlet.

* 110V applications: CBL-PS-PWR-01-001, p/n 875-563-10
220V applications: CBL-PS-PWR-03-002, p/n 875-562-10
(3' cord with IEC C13 connector and 220V US NEMA 6-15 plug)

2.1.6 Confirming the RF Drop

- An RF drop is required at the power supply site. The RF drop should not have plant voltage.
- The transponder contains a DOCSIS 2.0 cable modem. The downstream level (DS) into the transponder should be between -15 and +15 dBmV, with a recommended level of 0dBmV.

2.1.7 Provisioning Network Connectivity

The transponder's cable modem must be recognized by the CMTS as a valid device, obtain an IP address from the DHCP server, locate the TFTP and TOD servers, and communicate with the SNMP management server (trap receiver). Different security methods are used to insure network integrity, some common issues are:

- A "subscriber account" (where the subscriber is the transponder) may be required for each transponder.
- The transponder's MAC address may have to be pre-loaded into the CMTS.
- MAC filtering may have to be modified to allow MAC addresses starting with 00:03:08xx:xx:xx to be registered.
- For SNMP access, UDP ports 161 & 162 must not be blocked.
- Firewalls must allow communication between the cable modem and the various servers noted above.
- If the address of the TFTP and/or TOD server is different than the DHCP server, the response from the DHCP server must contain the TFTP and TOD addresses.

2.1.8 Configuring MIBs

- This step is not performed in the field, but at the network end of the installation.
- There are two propriety MIBs (Management Information Base) from Networks needed to configure the XP-EDH-A2. Refer to Section 4.0, "*Proprietary Management Information Bases (MIBs)*" for detailed information.

2.0 Installation, continued

2.1 General Installation Information for Supported Power Supplies, continued

2.1.9 Setting the DOCSIS Configuration File Options

- This step is performed at the network end of the installation.
- This file supplies the security and community string settings for the system, as well as the software upgrade parameters. Set the community strings, matching your DOCSIS cable modems. The following is an example:

Sets Read-Write Community string. Set the IP addresses and community strings to fit your system.	SNMP MIB Object (11) [Len=21]:docsDevNmAccessStatus.1/4
	SNMP MIB Object (11) [Len=21]:docsDevNmAccessIp.1/192.168.1.0
	SNMP MIB Object (11) [Len=21]:docsDevNmAccessIpMask.1/255.255.255.0
	SNMP MIB Object (11) [Len=25]:docsDevNmAccessCommunity.1/"RWRWRWRW"
Sets Read-Only Community string. Set the IP addresses and community strings to fit your system.	SNMP MIB Object (11) [Len=21]:docsDevNmAccessStatus.2/4
	SNMP MIB Object (11) [Len=21]:docsDevNmAccessIp.2/192.168.1.0
	SNMP MIB Object (11) [Len=21]:docsDevNmAccessIpMask.2/255.255.255.0
	SNMP MIB Object (11) [Len=25]:docsDevNmAccessCommunity.2/"RORORORO"
Sets firmware download parameters.	Software Upgrade Filename(9) [Len=24]:"MODEM_Firmware_file.bin"
	SNMP MIB Object (11) [Len=20]:docsDevSwAdminStatus.0/2
	Software Upgrade TFTP Server (21) [Len=4]:192.168.1.51
Sets Code Verification Certificate (CVC)	Manufacturer Code Verification Certificate (32) [Len=254]: 30 82 03 1A 30 82...
	Manufacturer Code Verification Certificate (32) [Len=254]: 04 0A 13 11 41 4D...
	Manufacturer Code Verification Certificate (32) [Len=254]: 04 0C 30 0A 06 01...
	Manufacturer Code Verification Certificate (32) [Len=36]: 11 A3 41 A6 A7 D9....

2.1.10 Verifying Operation

- After the connections are complete and the transponder's online LED is on solid, indicating network connectivity, verify the site is visible on the appropriate cable modem or computer network, and that all parameters being monitored are visible and accurate.
- Any standard Web browser on a personal computer configured for network connectivity to the transponder should be able to read the XP-EDH-A2 Web interface by simply pointing the Web browser to the IP address of the transponder (for example, <http://10.1.3.65>).
- Confirm that all cable harnesses are neatly dressed within the enclosure.
- Verify that you can close the cabinet door, and move the battery tray in and out, without contacting or damaging any of the cables.

3.0 Installation Instructions for Specific Power Supplies

These are specific installation instructions for standby power supplies supported by the XP-EDH-A2 transponder. Each set of instructions include the interface card settings, a system diagram, and the output voltage calibration needed to successfully operate.



NOTE:

All settings and instructions specified here supercede information found in previous manuals.



NOTE:

When monitoring commercial line power, the XM2 (with the USM2.5 card) does not require an input voltage transformer because the USM2.5 card provides a scaled voltage representing the line input to the power supply. In this situation, the transponder makes the measurement via the interface cable connected to the USM2.5 card.

3.1 Alpha XM2 Series



NOTE:

The EDH-A2 supports AC Scaling for Output Voltage measurements as opposed to DC scaling for the EDH-A. As a result the USM2/USM2.5 switch settings are different and calibration is no longer necessary. Refer to the EDH-A Installation Manual for EDH-A installation procedures.

1. Determine the characteristics of the power supply, such as the inverter voltage (36V or 48V), and the maximum capable output current (typically <20A or >20A).
2. If commercial power is present at the site and the power supply is currently being powered by commercial AC line voltage, turn the battery breaker OFF on the inverter module.



NOTE:

Turning the battery breaker OFF disables standby power.

3. Slide the inverter drawer out to gain access to the switches or jumpers located on the various types of USM2 and USM2.5 cards. If you need to install a USMx card, refer to the manual supplied with the card and complete the installation process.
4. Refer to the following diagram and adjust the switch settings to match your power supply.
5. Re-insert the inverter module and tighten the retaining screws.

ATTENTION:

Alpha's XM2 power supply installations using USM2 (both new and old versions) and USM2.5 cards require switch/jumper settings to be made for proper operation.

3.0 Installation Instructions for Specific Power Supplies, continued

3.1 Alpha XM2 Series, continued

3.1.1 USM2.5 Jumper Settings

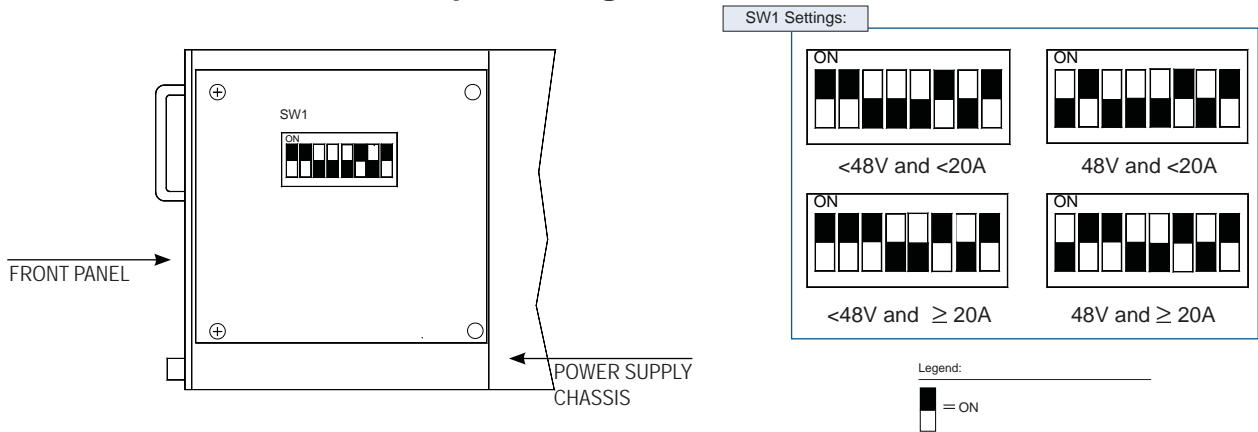


Fig. 3-1, USM2.5 Switch/Jumper Settings

NOTE:

The switch settings in this section apply only to the EDH-A2 and differ from the EDH-A. Refer to the EDH-A Installation Manual for EDH-A installation procedures.

3.1.2 Output Voltage Calibration

EDH-A2 supports AC Scaling for Output Voltage measurements and does not require USM2.5 potentiometer calibration.

3.0 Installation Instructions for Specific Power Supplies, continued

3.1 Alpha XM2 Series, continued

3.1.3 USM2 Jumper Settings

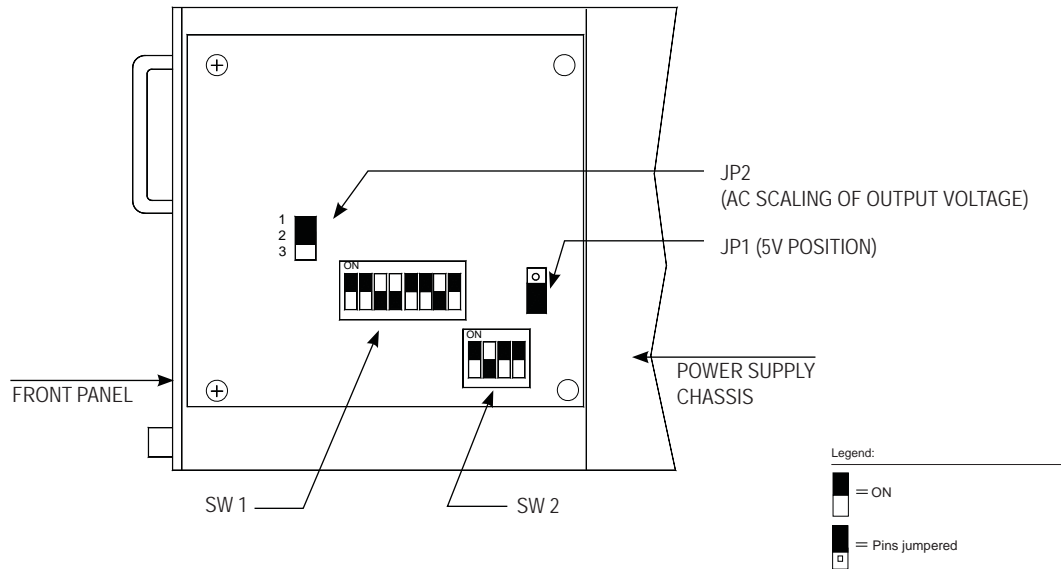


Fig. 3-2, USM2 Settings for $<48V$ and $<20A$

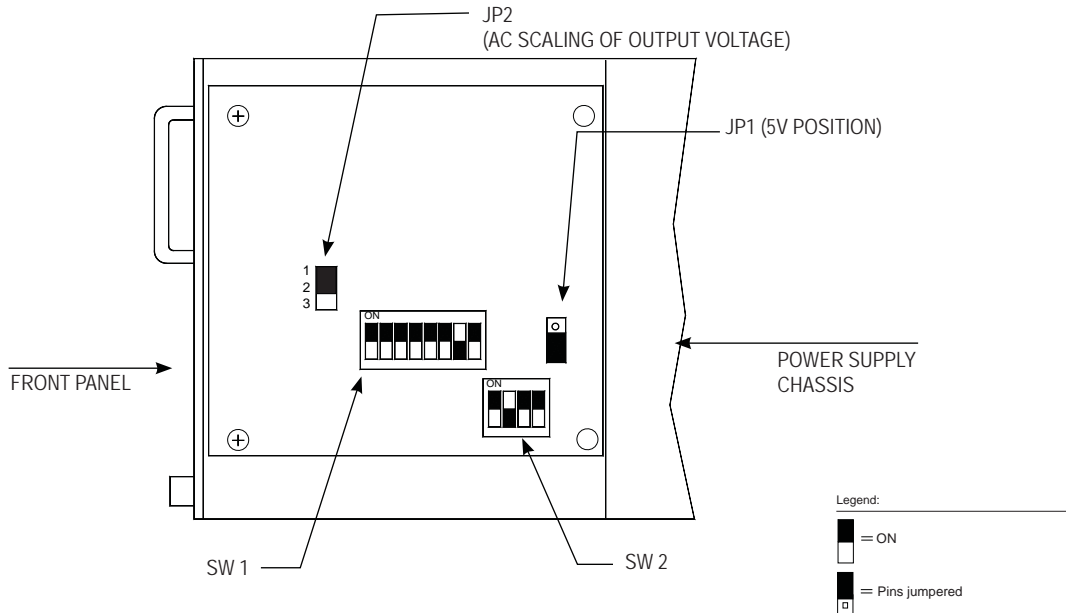


Fig. 3-3, USM2 Settings for $<48V$ and $\ge 20A$

3.0 Installation Instructions for Specific Power Supplies, continued

3.1 Alpha XM2 Series, continued

3.1.3 USM2 Jumper Settings, continued

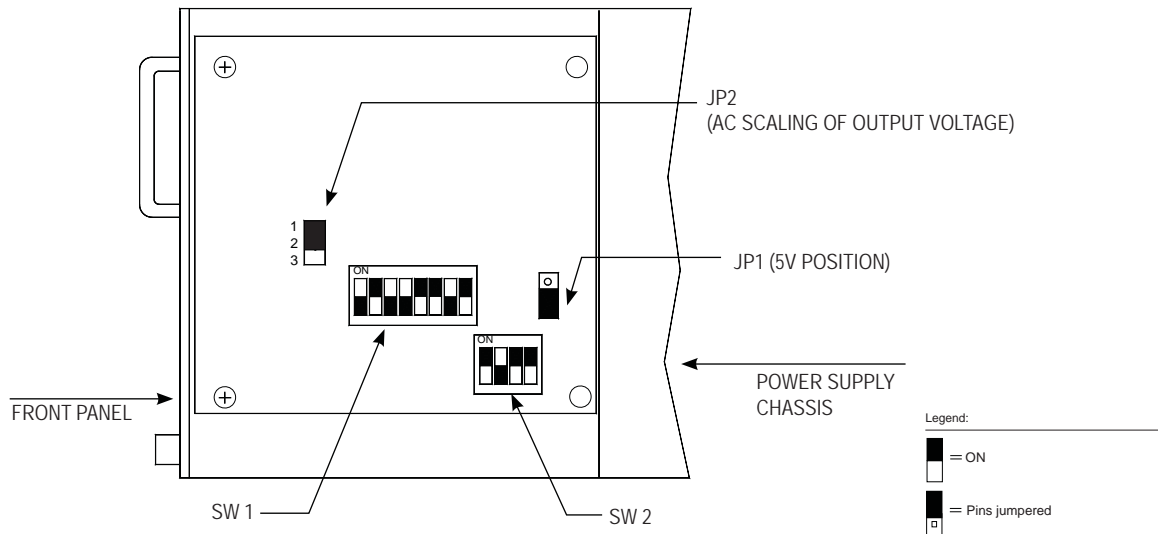


Fig. 3-4, USM2 Settings for 48V and <20A

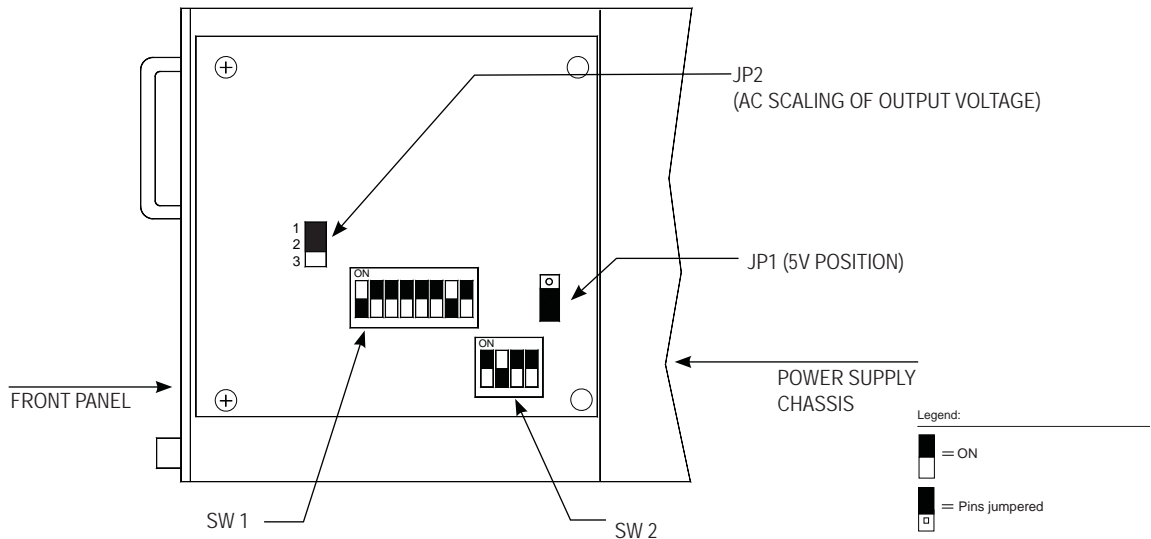


Fig. 3-5, USM2 Settings for 48V and $\geq 20A$



NOTE:

The switch settings in this section apply only to the EDH-A2 and differ from the EDH-A. Refer to the EDH-A Installation Manual for EDH-A installation procedures.

3.1.4 Output Voltage Calibration

EDH-A2 supports AC Scaling for Output Voltage measurements and does not require USM2.5 potentiometer calibration.

3.0 Installation Instructions for Specific Power Supplies, continued

3.1 Alpha XM2 Series, continued

3.1.6 Provisioning the Network for the XM2 Series

The transponder must be recognized by the CMTS as a valid device, be able to obtain an IP address and communicate with the SNMP management server.

1. Load the transponder's MAC address into the CMTS.
2. Compile the two MIBs using a network manager or MIB browser software.
3. Setup SNMP using two proprietary MIBs files.
4. Set the MIBS points for the XM2 as follows:

For XM2

Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 set to (2) (power supply selection)

Oid: 1.3.6.1.4.1.2183.2.3.6.5 set to (4) (output voltage scaling)

Oid: 1.3.6.1.4.1.2183.2.3.6.6 set to (1) for 110V powered supply or (2) for 220V

5. Install and configure the DOCSIS configuration file. See Section 2.1.9 for a sample file.

Refer to Section 4.0, "*Proprietary Management Information Bases (MIBs)*" for detailed information.

3.0 Installation Instructions for Specific Power Supplies, continued

3.2 Alpha XM Series Power Supply



NOTE:

You may require a chipset upgrade for the USM and XM inverter drawer for proper operation with the XP-EDH-A2. Operating an XM series power supply with the XP-EDH-A2 with the wrong version chipset firmware may result in intermittent or incorrect operation of the power supply. Contact your Alpha representative for additional information.



NOTE:

The EDH-A2 supports AC Scaling for Output Voltage measurements as opposed to DC scaling for the EDH-A. As a result the USM switch settings are different and calibration is no longer necessary. Refer to the EDH-A Installation Manual for EDH-A installation procedures.

1. If commercial power is present at the site, and the power supply is currently being powered by commercial AC line voltage, turn the battery breaker OFF on the inverter module.



NOTE:

When the battery breaker is turned OFF, standby power is disabled.

2. Slide the inverter drawer out to gain access to the USM card. Remove the USM/APM assembly from the inverter drawer. To install the USM and APM cards, refer to the manual supplied with the cards and complete the installation process.
3. Refer to the following diagram and adjust the jumper settings to match your power supply.
4. Reinstall the USM/APM assembly into the connector on the inverter drawer. Secure with the screw and bracket.
5. Re-insert the inverter module.

3.0 Installation Instructions for Specific Power Supplies, continued

3.2 Alpha XM Series Power Supply, continued

3.2.1 XM Series Jumper Settings

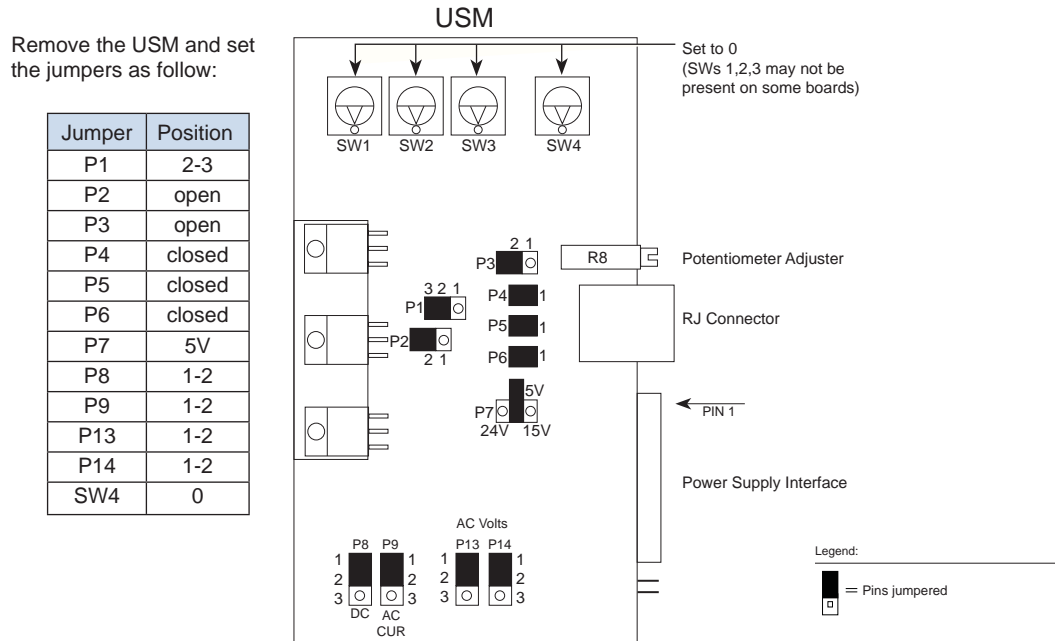


Fig. 3-7, XM/XP Power Supply Universal Status Monitor
 (as viewed from rear of power supply with main control module partially removed)

NOTE:

The switch settings in this section apply only to the EDH-A2 and differ from the EDH-A. Refer to the EDH-A Installation Manual for EDH-A installation procedures.

3.2.2 Output Voltage Calibration

EDH-A2 supports AC Scaling for Output Voltage measurements and does not require USM2.5 potentiometer calibration.

3.0 Installation Instructions for Specific Power Supplies, continued

3.2 Alpha XM Series Power Supply, continued

3.2.3 Connecting the XP-EDH-A2 to an XM Series Power Supply

Follow the diagram below to make all connections between the transponder and the power supply site. The diagram is the cable installation guide drawing with interface, three batteries, and power to an Alpha XM power supply.



CAUTION!

Improper wiring may damage the unit and void the warranty.

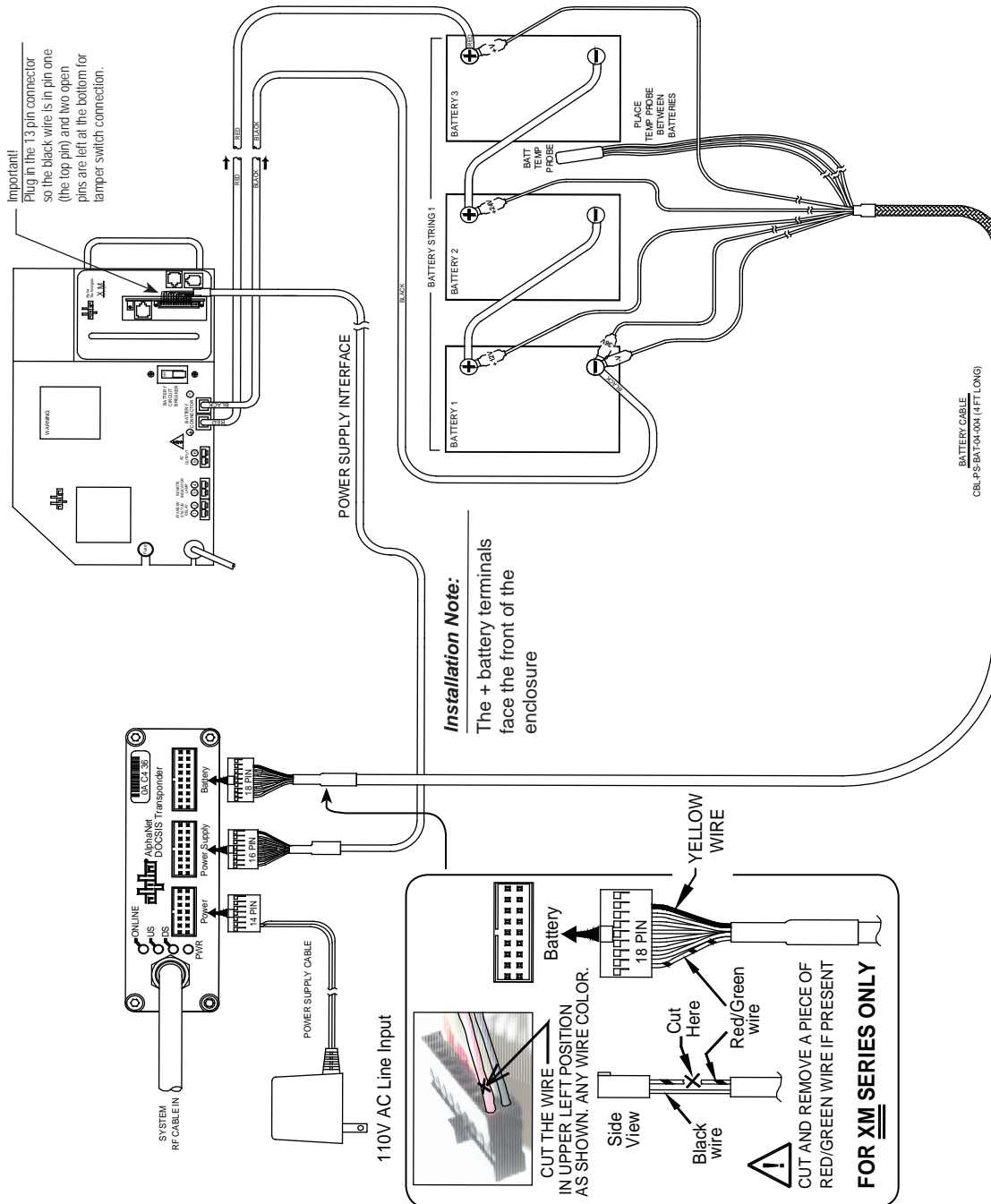


Fig. 3-8, XM Series Installation with Three Batteries

3.0 Installation Instructions for Specific Power Supplies, continued

3.2 Alpha XM Series Power Supply, continued

3.2.4 Provisioning the Network for the XM Series

The transponder must be recognized by the CMTS as a valid device, obtain an IP address, and communicate with the SNMP management server.

1. Load the transponder's MAC address into the CMTS.
2. Setup SNMP using two proprietary MIBs files.
3. Compile the two MIBs onto a network manager or MIB browser software.
4. Set the MIBS points for the XM as follows:

Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 set to (3) (power supply selection)

Oid: 1.3.6.1.4.1.2183.2.3.6.5 set to (4) (output voltage scaling)

Oid: 1.3.6.1.4.1.2183.2.3.6.6 set to (1)for 110V powered supply or (2) for 220V (input voltage measurement)

See Section 4.0, Proprietary Management Information Bases (MIBs) for detailed information.

5. Install and configure the DOCSIS configuration file. See Section 2.1.9 for a sample file.

3.0 Installation Instructions for Specific Power Supplies, continued

3.3 Alpha AM/AP Series Power Supply



WARNING!

Installing the XP-EDH-A2 transponder at an Alpha AM power supply site requires shutting down the power supply. If a short power interruption is not feasible, you must use an alternate source of system power during the installation of the transponder. This is necessary to install the RPM interface card, and to make connections to the output of the power supply to permit monitoring of the output voltage of the power supply.

If a short power interruption is not feasible, you must use an alternate source of system power during the installation of the transponder.

1. If commercial power is present at the site, and the power supply is currently powered by commercial AC line voltage, turn the battery breaker OFF on the power supply and disconnect the power supply from utility power.
2. If not already installed, install the RPM card. Refer to the instructions that come with this assembly.



NOTE:

The RPM card cannot be installed while the power supply is running on utility or battery power.

3.3.1 Connecting the XP-EDH-A2 to an AM/AP Series

Follow Fig. 3-9 to make connections between the transponder, the power supply site and battery string.

3.0 Installation Instructions for Specific Power Supplies, continued

3.3 Alpha AM/AP Series Power Supply, continued

3.3.1 Connecting the XP-EDH-A2 to a AM/AP Series, continued



CAUTION!

Improper wiring may damage the unit and void the warranty.

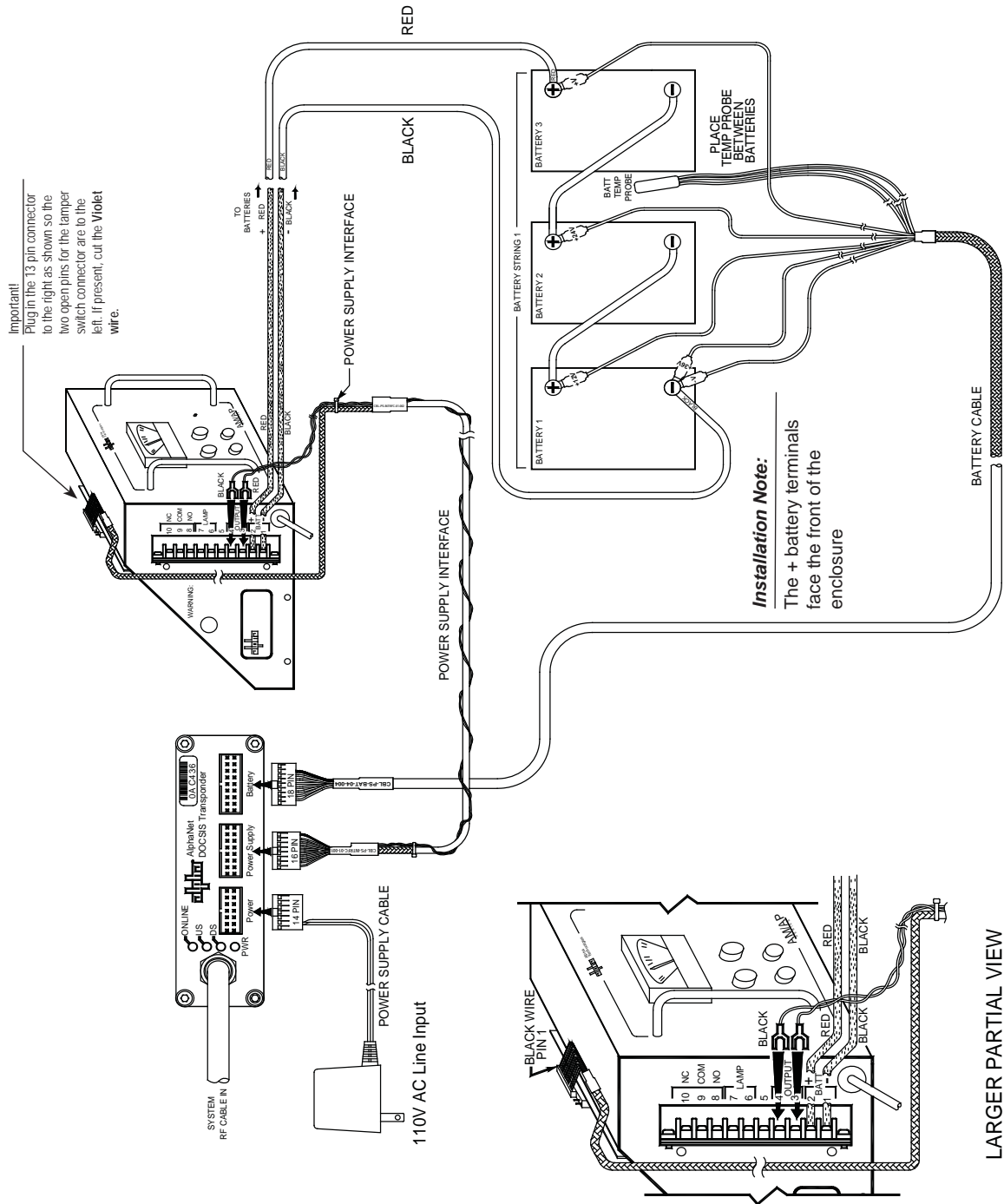


Fig. 3-9, AM/AP Series Power Supply, Transponder with Three Batteries

3.0 Installation Instructions for Specific Power Supplies, continued

3.3 Alpha AM/AP Series Power Supply, continued

3.3.2 Output Voltage Calibration

No calibration is necessary for the Alpha AM/AP power supply.

3.3.3. Provisioning the Transponder on the Network

The transponder must be recognized by the CMTS as a valid device and be able to obtain an IP address and communicate with the SNMP management server.

1. Load the transponder's MAC address into the CMTS.
2. Setup SNMP using the two propriety MIBs files.
3. Compile the two MIBs onto a network manager or MIB browser software.
4. Set the MIBS points for the AM/AP as follows:

Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 set to (4) (power supply selection)

Oid: 1.3.6.1.4.1.2183.2.3.6.5 set to (3) (acNormal for output voltage measurement)

Oid: 1.3.6.1.4.1.2183.2.3.6.6 set to (1)for 110V powered supply or (2) for 220V (input voltage measurement)

See Section 4.0, Proprietary Management Information Bases (MIBs) for detailed information.

5. Install and configure the DOCSIS configuration file. See Section 2.1.9 for a sample file.

3.0 Installation Instructions for Specific Power Supplies, continued

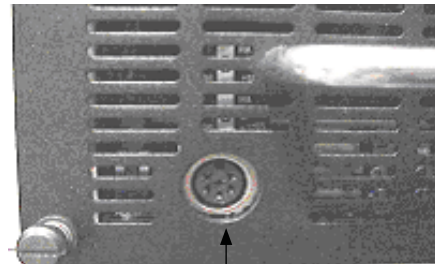
3.4 Alpha/Lectro ZTT+ Series Power Supply

There are two models of the Lectro ZTT+ Series power supply inverter modules. You can easily identify one type from the other by checking the round 6-pin DIN connector located on the lower left side of the front panel:

- Early units have a solid black DIN connector (pre-1998).
- More current units have a silver band around the DIN connector.



Early (pre-1998) unit with solid black connector



Current unit with silver band on connector

Fig. 3-10, Lectro ZTT+ Series Power Supplies

Procedures for installing the XP-EDH-A2 with both types of Lectro ZTT+ Series power supplies follow and are differentiated by a silver or black designation.



CAUTION!

Installing the XP-EDH-A2 transponder at Alpha/Lectro ZTT+, or ZTT sites requires temporarily disconnecting the output of the power supply to the cable plant to insert one of the transponder harnesses in series with the power supply output. This is necessary so the transponder can measure both the output voltage and output current.

If a short power interruption is not feasible, you must use an alternate source of system power during the installation of the transponder.

3.4.1 Alpha/Lectro ZTT+ Installation (Silver and Black)

1. If commercial power is present at the site and the power supply is currently powered by commercial AC line voltage, turn the battery breaker OFF on the power supply and disconnect the AC utility power.



NOTE:

Turning the battery breaker OFF disables the standby power supply.

2. Locate the transponder interface cable with the 6-pin type DIN connector. This harness has a selectable switch near the silver 6-pin shell. Place the switch in the ZTT+ Silver position or in the Black position depending on what type of power supply you are using.
3. Make all other harness connections following the diagram in Fig. 3-11.
4. If a site tamper switch is employed, connect the two lugs within the harness to the connections on the door switch.
5. Restore AC utility power and place the DC breaker back to the ON position.

3.0 Installation Instructions for Specific Power Supplies, continued

3.4 Alpha/Lectro ZTT+ Series Power Supply, continued

NOTE: 3.4.2 Connecting the Alpha/Lectro ZTT+ (Silver and Black)

The Lectro ZTT+ installation diagram is the same for both the black and silver connector with the exception of the switch setting on the interface harness. For a black connector, set the switch to the ZTT+ black position and for a silver connector, set the switch to the silver position.

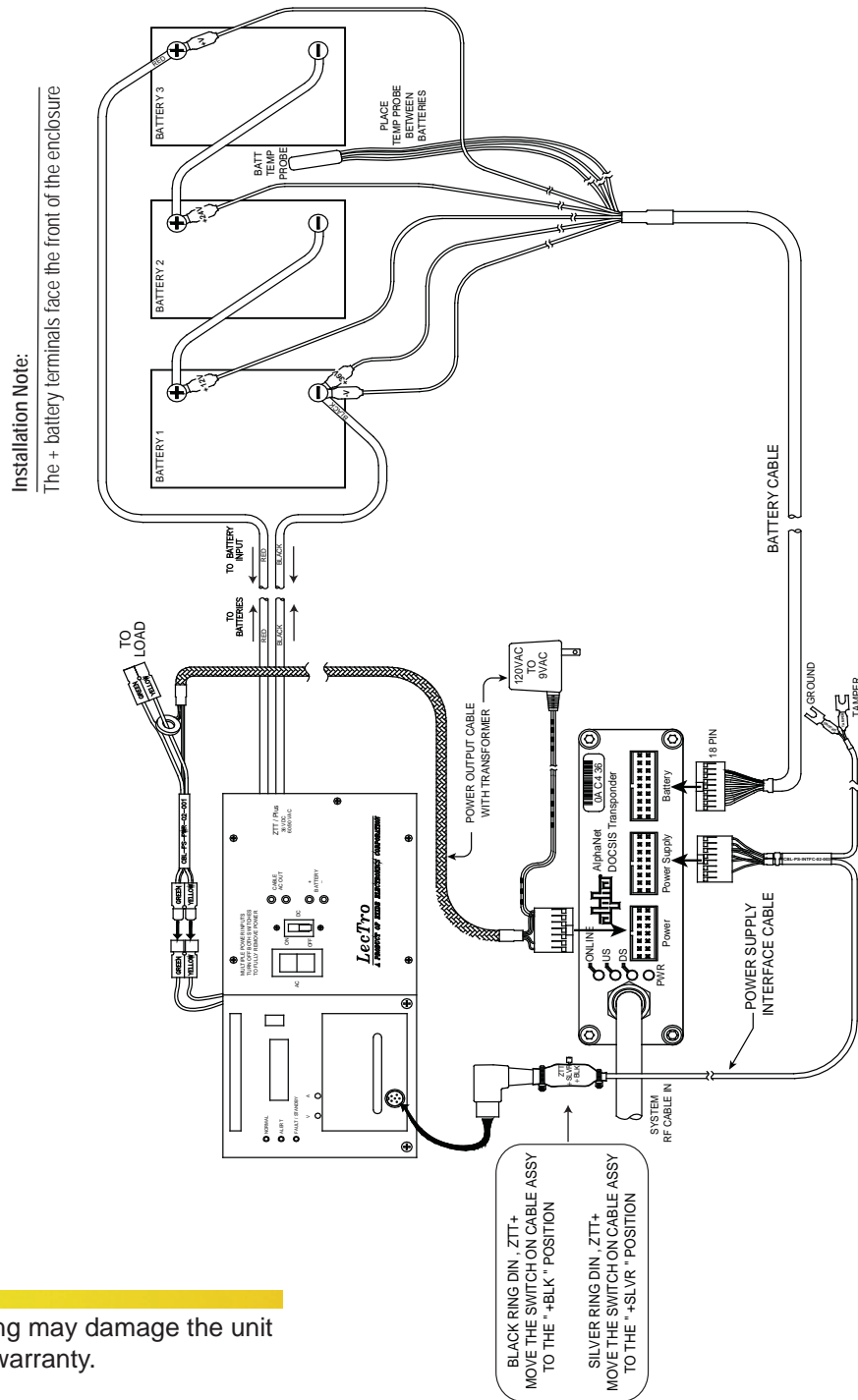


Fig. 3-11, Alpha/Lectro ZTT+ Series Silver and Black Installation

3.0 Installation Instructions for Specific Power Supplies, continued

3.4 Alpha/Lectro ZTT+ Series Power Supply, continued

3.4.3 Connecting the Lectro ZTT

Installation of the Lectro ZTT is the same as that for the ZTT+ series except for moving the switch located in the interface harness to the ZTT position.

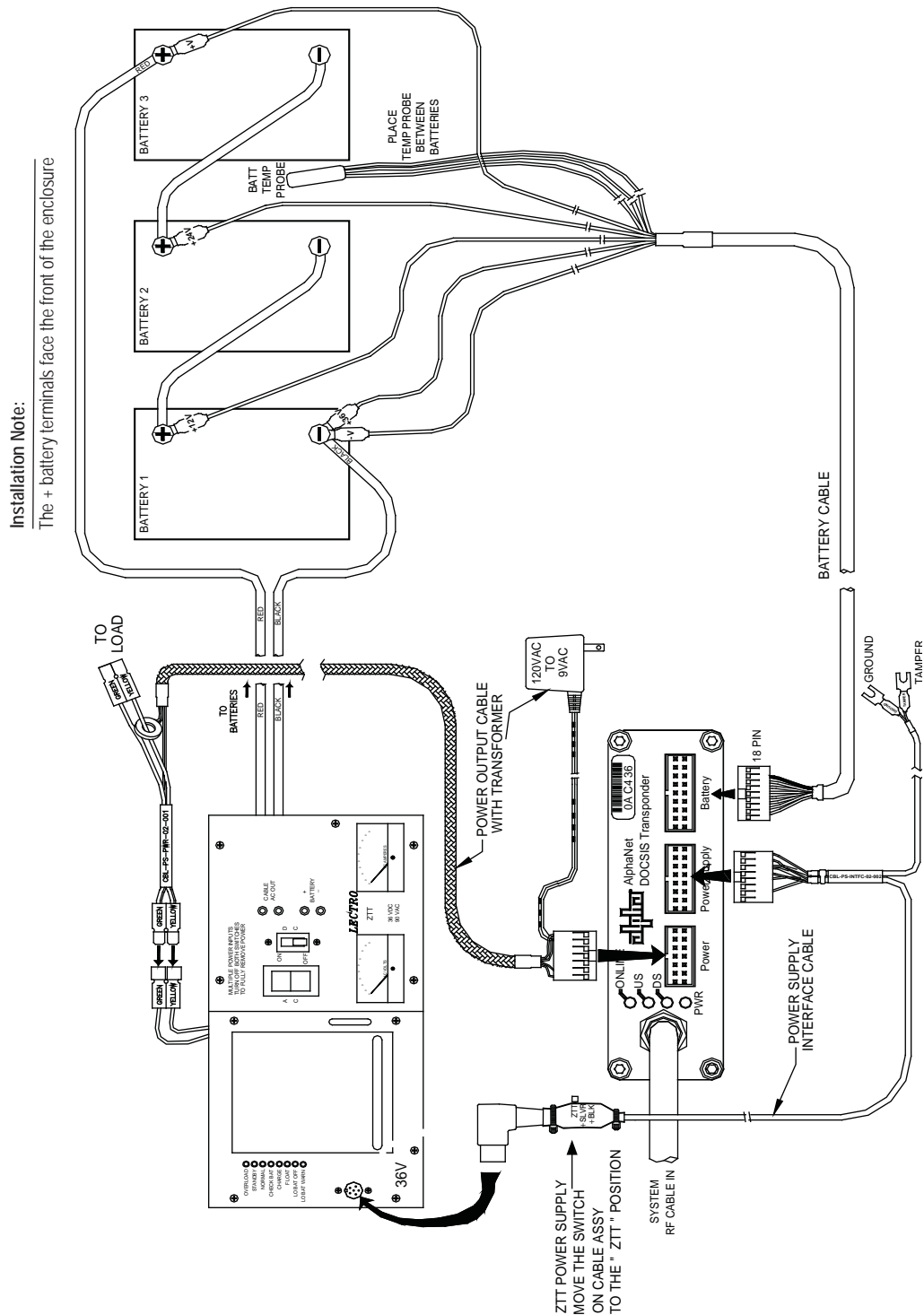


Fig. 3-12, Lectro ZTT Series Installation

3.0 Installation Instructions for Specific Power Supplies, continued

3.4 Alpha/Lectro ZTT+ Series Power Supply, continued

3.4.4 Alpha/Lectro ZTT+ Series Output Voltage Calibration

No calibration is necessary for the ZTT+ Series power supplies.

3.4.5. Provisioning the Network for the Alpha/Lectro ZTT+ Series

The transponder must be recognized by the CMTS as a valid device, obtain an IP address and communicate with the SNMP management server.

1. Load the transponder's MAC address into the CMTS.
2. Setup SNMP using the two propriety MIBs files.
3. Compile the two MIBs onto a network manager or MIB browser software.
4. Set the MIBS points for the Lectro ZTT+/ZTT(silver or black DIN) as follows:

Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 set to (7) (ZTT+ power supply selection)

Oid: 1.3.6.1.4.1.2183.2.3.6.5 set to (3) (acNormal for output voltage measurement)

Oid: 1.3.6.1.4.1.2183.2.3.6.6 set to (1)for 110V powered supply or (2) for 220V (input voltage measurement)

-or-

Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 set to (6) (ZTT power supply selection)

Oid: 1.3.6.1.4.1.2183.2.3.6.5 set to (3) (acNormal for output voltage measurement)

Oid: 1.3.6.1.4.1.2183.2.3.6.6 set to (1)for 110V powered supply or (2) for 220V (input voltage measurement)

See Section 4.0, Proprietary Management Information Bases (MIBs) for detailed information.

5. Install and configure the DOCSIS configuration file. See Section 2.1.9 for a sample file.

4.0 Proprietary Management Information Bases (MIBs)

You need to use two proprietary MIBs to successfully configure the XP-EDH-A2 to use the power supplies described in this manual. Compile these two MIBs onto a network manager or MIB browser software.

To see a specific example of a MIBs file for a particular power supply, see that section of the manual.

The objects available are:

Object	Description
amDocsisDevicesTable	Oid: 1.3.6.1.4.1.2183.2.3.3.1.2 Set to the type of supply being monitored: alphaXM2 (2) default alphaXM (3) alphaAM/AP (4) lectroSentryII (5) lectroZTT (6) lectroZTTPlus (7)
amDocsisOPVoltageScaling	Oid: 1.3.6.1.4.1.2183.2.3.6.5 Set to 4 with Alpha XM2 type supplies using USM2 or USM2.5 cards. Set to 4 with Alpha XM type supplies using USM cards. Set to 3 for legacy power supplies (AM/AP, Lectro ZTT, ZTT+).
amDocsisInputVoltageMeasScaling	Oid: 1.3.6.1.4.1.2183.2.3.6.6 Set to 1 (default) for 110V powered supplies (Alpha or Lectro). Set to 2 for 220V powered supplies (Alpha or Lectro). <i>Note: Presently this object is used in conjunction with Alpha's 110V or 220V wall/brick transformers to sample the input line voltage.</i> The scaled voltage available in the Alpha USM2.5 cards report the input line voltage.

Table 4-1, Proprietary MIBs

5.0 Transponder Connector Pinouts

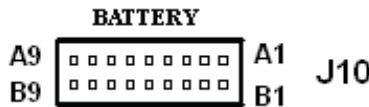
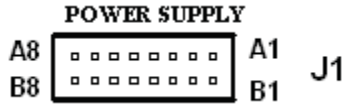
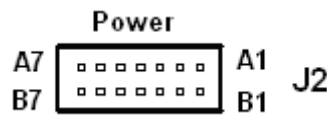
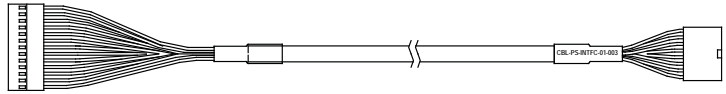
Connector	Pinouts Pins numbered right to left, facing front panel, A = top row, B= bottom row
<p>Battery Interface</p> 	<ul style="list-style-type: none"> A1 Battery 5+ A2 Battery 6+ A3 Battery 7+ A4 Battery 9+ A5 Battery 10+ A6 Battery 11+ A7 N/C A8 N/C A9 Chassis Ground B1 N/C B2 Battery V+ B3 Battery 3+ B4 Battery 2+ B5 Battery 1+ B6 Battery Reference V- B7 Temperature Probe Power B8 Temperature Probe Signal B9 Temperature Probe Ground
<p>Power Supply Interface (16 Pin)</p> 	<p>Connector J1</p> <ul style="list-style-type: none"> A1 Charging Current A2 Major Alarm A3 Tamper A4 Minor Alarm A5 Inverter Status A6 Output Current1 A7 Total Battery Voltage A8 Output Current2 B1,B2 GND B3 AC Input Voltage B4 Inverter Control B5 Spare Analog Input B6 AC Power to the Transponder (Hot) B7 AC Power to the Transponder (Neutral) B8 Spare Input1
<p>Power Supply Interface (14 Pin)</p> 	<p>Connector J2</p> <ul style="list-style-type: none"> A1 Output Current1 A2 Output Current2 A3 Output Current3 A4 N/C A5 N/C B1-B5 GND A6 Scaled AC Line Voltage Input B6 GND A7 AC to the Transponder (Hot) B7 AC to the Transponder (Neutral)

Table 5-1, Transponder Connector Pinouts

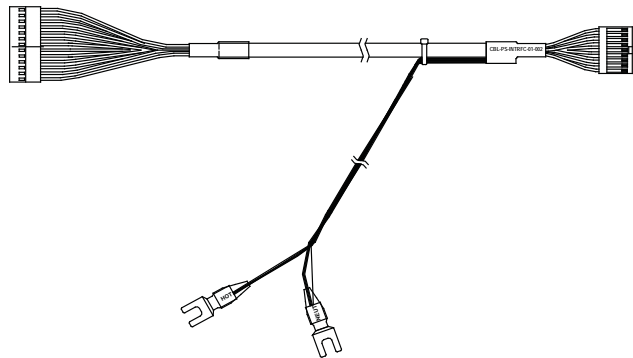
6.0 Cable Selection Guide

Interface cables :

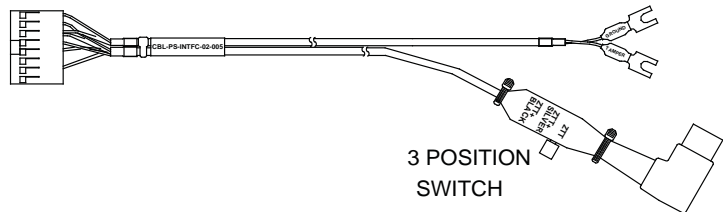
XM , XM2 power supplies
CBL-PS-INTFC-01-003
(Alpha P/N 875-565-10)



AM / AP power supplies
CBL-PS-INTFC-01-002
(Alpha P/N 875-564-10)

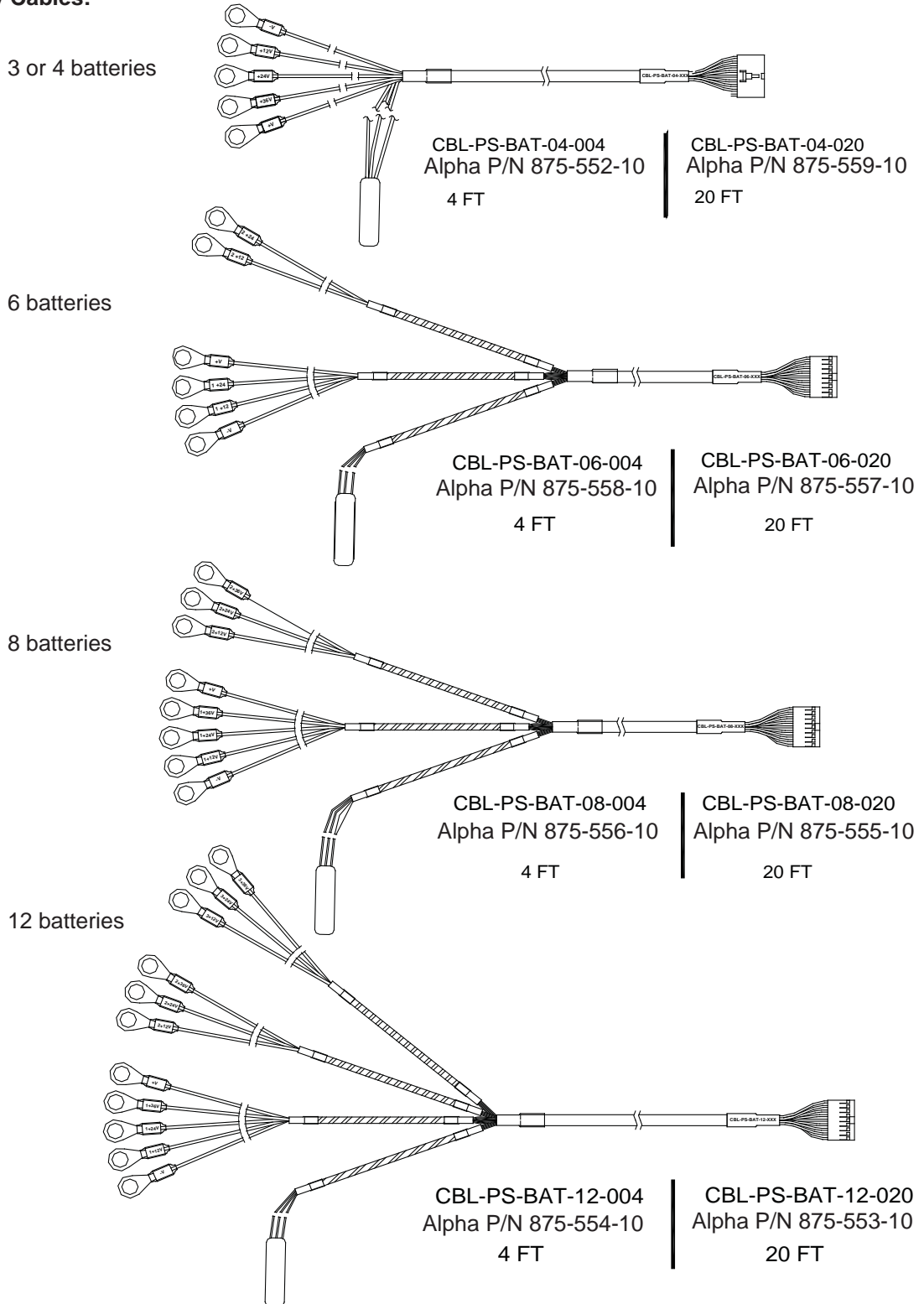


Lectro ZTT & ZTT+ power supplies
CBL-PS-INTFC-02-005
(Alpha P/N 875-566-10)



6.0 Cable Selection Guide, continued

Battery Cables:



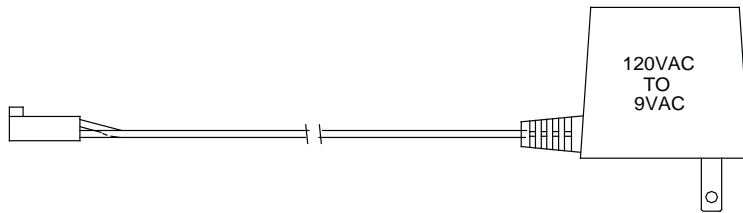
6.0 Cable Selection Guide, continued

Line Voltage Cables:

XM , XM2 , AM/AP, 120Vac

CBL-PS-PWR-01-001

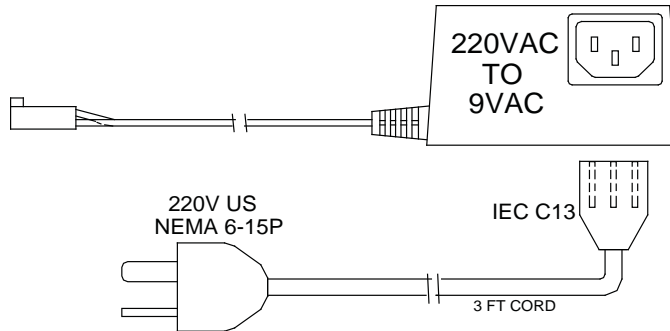
Alpha P/N 875-563-10



XM , XM2 , AM/AP, 220Vac

CBL-PS-PWR-03-002

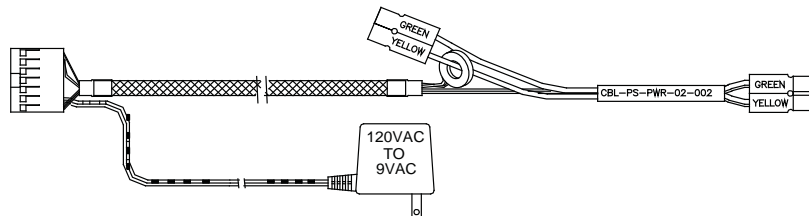
Alpha P/N 875-562-10



Lectro ZTT, ZTT+, 120Vac

CBL-PS-PWR-02-002

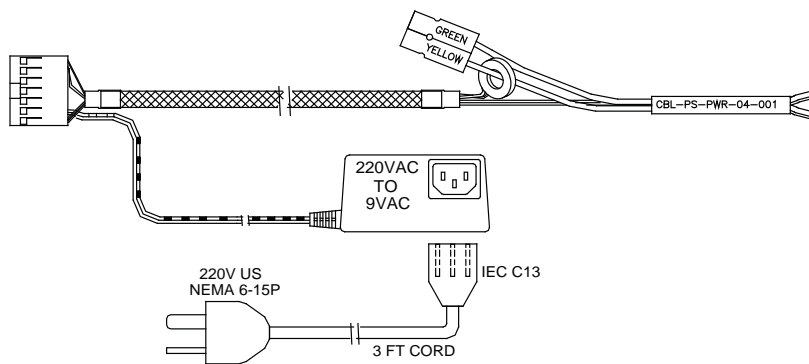
Alpha P/N 875-718-10



Lectro ZTT, ZTT+, 220Vac

CBL-PS-PWR-04-001

Alpha P/N 875-717-10



7.0 Dimensions and Specifications

7.1 Dimensions of XP-EDH-A2

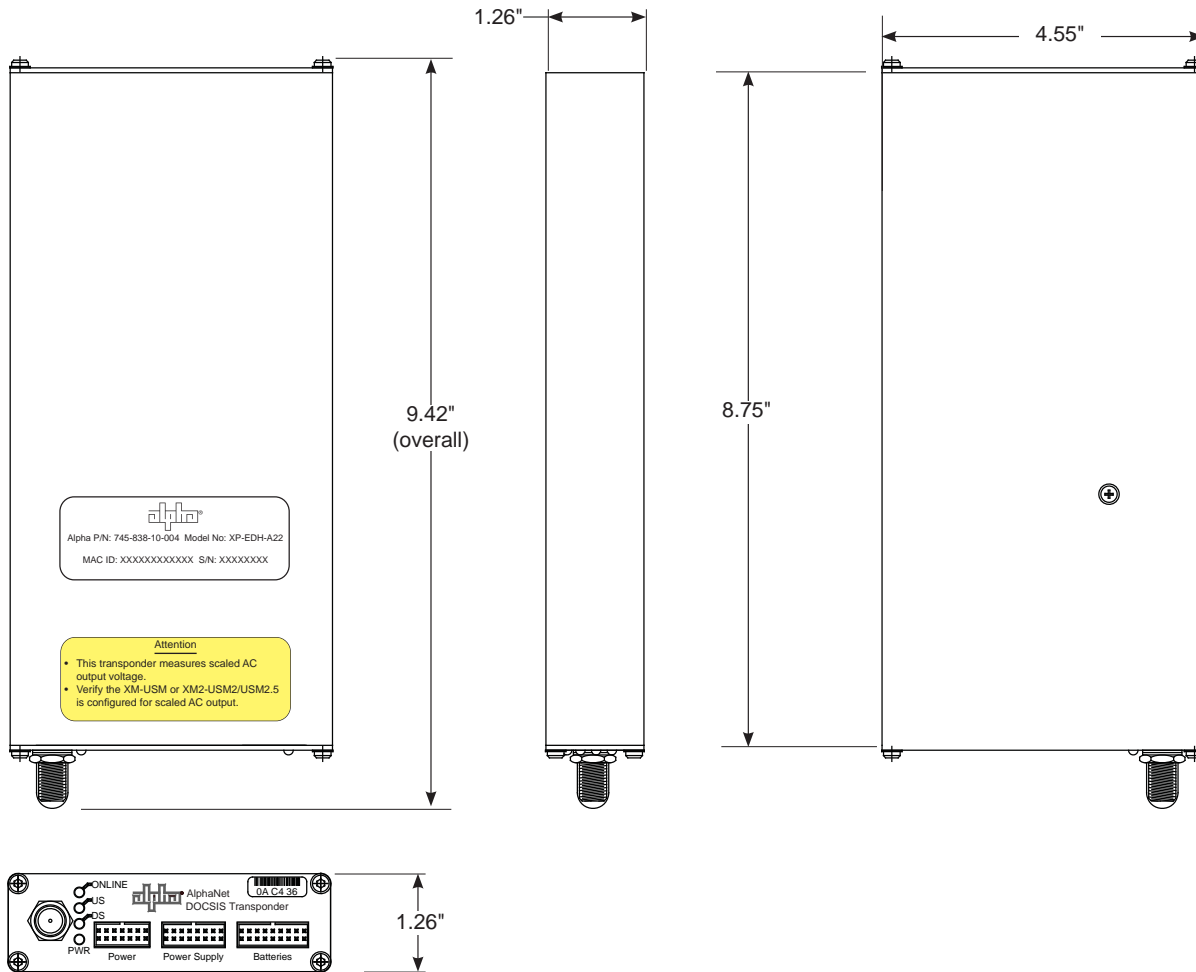


Fig. 7-1, Outline Dimensions, XP-EDH-A2

7.0 Dimensions and Specifications, continued

7.2 Battery Cable Wiring Diagram



CAUTION!

The following diagram shows wiring to three batteries using a six battery cable.

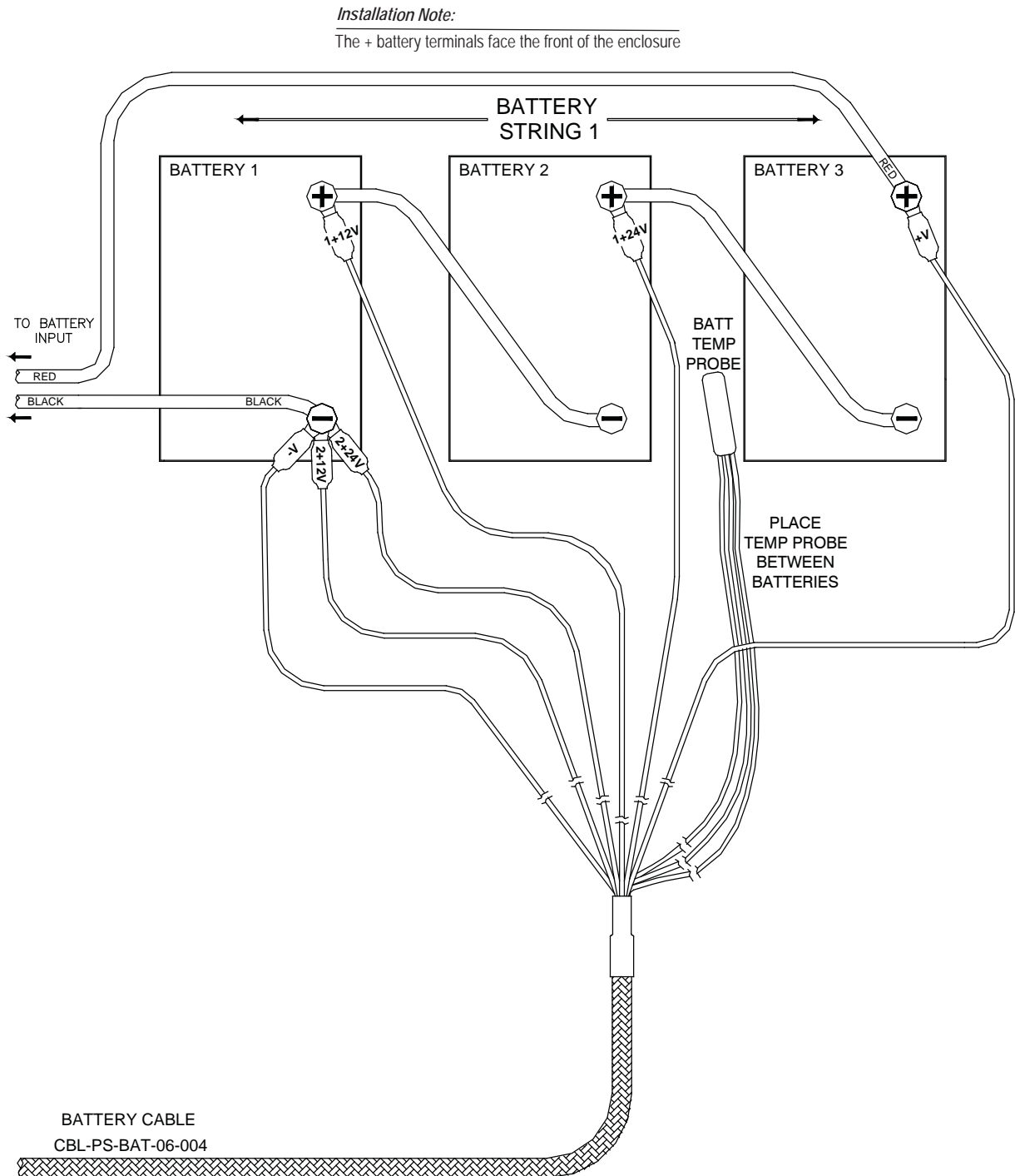


Fig. 7-2, Battery Cable Wiring Diagram

8.0 Specifications

General Specifications

General
 Model: XP-EDH-A2
 Power Supplies Supported: XM2 (requires USM2 or USM2.5)
 XM (requires USM)
 AM (requires APM card)
 Lectro ZTT, ZTT+
 DOCSIS Compatibility: DOCSIS 2.0
 Monitoring Protocol: SNMPv1,SNMPv2c

RF Transmit/Receive
 Tx Frequency Range: 5 to 42MHz
 Output Power: 8 to 55dBmV
 Channel Bandwidth: 6MHz
 Receive Center Freq Range: 91 to 857MHz (Standard, HRC, IRC channels)
 Input Level: -15 to +15dBmV

Monitored Parameters

Power Supply Data

Model:	XM2	XM	AM	ZTT Series
Major Alarm:	X	X	X	X
Minor Alarm:	X	X	X	X
Input Line Voltage:	X	X ¹	X ¹	X ¹
Output Voltage:	X	X	X	X ¹
Battery Voltage:	X	X	X	X
Output Current:	X	X	X	X ¹
Standby/AC Line Fail:	X	X	X	X
Equipment/Test Fail:	X	X	X	
Enclosure Door Status:	X	X	X	X
Remote Test Control:	X	X	X	X

Notes:
 1 Requires optional cable assembly

Number of Battery Strings: One to three of 36V or 48V
 Battery Data: Individual Battery Voltages
 Battery Compartment Temperature

Hardware
 RF Cable Interface: F-connector, female, 75Ohm
 Local Port Interface: USB Type B
 LED Indicators: CMTS Registration
 Upstream Activity
 Downstream Activity
 Unit Power
 Environmental: -40 to 65°C
 10 to 90% non-condensing humidity
 Emissions: EN50022 Class A and FCC Part 15 Class A
 (Installed in power supply enclosure system)
 Immunity: Surge Test per Specification (IEEE C62.41-1991)
 ESD Protection: ±8kV air discharge, ±6kV contact
 discharge as per (IEC 61000-4-2)
 Warranty: 2 years
 Dimensions (in): 5.2D x 8.6W x 1.3H

Management
 NMS/EMS: • Standard SNMP Management Tools
 HMS MIBs:
 In addition to the standard DOCSIS MIBs, the transponder
 supports the following HMS MIBs:
 SCTE 25-3 (HMS-022): Interface
 SCTE 36 (HMS-050): Root
 MIB SCTE 37 (HMS-072): Tree
 MIB SCTE 38-1 (HMS-026): Property
 MIB SCTE 38-2 (HMS-023): Alarm MIB
 SCTE 38-3 (HMS-024): Common
 MIB SCTE 38-4 (HMS-027): Power Supply
 MIB SCTE 38-6 (HMS-033): Generator
 MIB SCTE 38-7 (HMS-050): TIB MIB

Ordering Information

Model Number	Description
XP-EDH-A2	AlphaNet External DOCSIS Transponder
CBL-PS-INT-01-003	Interface cable, XM, XM2 power supplies
CBL-PS-INT-01-002	Interface cable, AM/AP power supply
CBL-PS-INT-02-005	Interface cable, Lectro ZTT, ZTT+ power supplies
CBL-PS-PWR-01-001	Line voltage cable, XM, XM2, AM/AP, 120V
CBL-PS-PWR-03-002	Line voltage cable: XM, XM2, AM/AP, 220V
CBL-PS-PWR-02-002	Line voltage cable, Lectro 120VAC
CBL-PS-PWR-04-001	Line voltage cable, Lectro 220VAC
CBL-PS-BAT-04-004	Wire Kit, Battery Sense, 1x36V or 1x48V, 4'
CBL-PS-BAT-06-004	Wire Kit, Battery Sense, 2x36V, 4'
CBL-PS-BAT-08-004	Wire Kit, Battery Sense, 2x48V, 4'
CBL-PS-BAT-12-004	Wire Kit, Battery Sense, 3x48V, 4'

* Other Battery Sense Wire Kits available; contact Alpha for more information

Power

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